

Cuvier and Valenciennes * only recognize the existence of teeth in the premaxilla and mandible, not in the maxilla.

I have referred also to the descriptions of *Piabuca argentina* which are to be found in the earlier literature of the subject, but with negative results. The original account (accompanied by a roughly executed figure) is that of Marcgrave, in the 'Historia Naturalis Brazilæ,' 1648. Koelreuter describes and figures the fish under the name of *Trutta dentata* (Nov. Comm. Petrop. 1761, vol. viii. p. 413, tab. xiv. fig. 4). Bloch also describes and figures it under the name of *Salmo argentinus* ('Systema Ichthyologicæ' (Schn.), 1801, and taf. cccxxxii. fig. 1); and Lacépède describes it, without figure, under the name of *Characinus piabucu*, referring to the teeth merely as regards their form ('Histoire Naturelle des Poissons,' 1803, tome v. p. 272).

The point is of interest in view of the wide range of modification in the relations of the premaxilla and maxilla existing within the limits of the family Characinidæ. All intermediate stages are found between, on the one hand, the presumably primitive condition in which the maxilla bears teeth throughout its length and forms the major part of the border of the mouth, and, on the other, the condition in which the maxilla is toothless and so reduced as to be practically excluded from the gape. This has already been pointed out by Sagemehl †, Boulenger ‡, and others, and I hope to treat of the matter in some detail in a future paper. I would only point out here that in respect of these conditions *Piabuca* is one of the forms which occupy a somewhat central position in the group. It is in this connexion that the question of the presence or absence of maxillary teeth assumes interest and importance.

XXXI. — *Descriptions of new Australian Pupinæ and Pupinellæ, with a Note on Pupina pineticola, Cox.*
By HUGH C. FULTON.

[Plate IX.]

OWING to the fact that Dr. James C. Cox, C.M.Z.S.L., &c., when describing his species, attached no importance to separating one particular specimen as the type, it is very difficult

* 'Histoire Naturelle des Poissons,' 1849, vol. xxii. pp. 107 & 109.

† Morphol. Jahrb. x. 1885, p. 102.

‡ 'Les Poissons du Bassin du Congo,' 1901, p. 132.

to identify with certainty some of his species, more especially the smaller ones. Some of the figures on the plates of his work 'A Monograph of Australian Land-Shells' were evidently drawn by an incompetent amateur artist, and are of very little use for purposes of identification; this applies particularly to the figures of *pineticola*, pl. xvi. figs. 8, 8A, 8B; none of these figures are like specimens of *pineticola* from the collection of Dr. Hungerford, given to him by Dr. Cox himself, and which are now figured (Pl. IX.). I may say that these shells agree well with Dr. Cox's description.

In the following descriptions, by *anterior canal* I mean the opening on the columellar lip, the *posterior* being the one at point of insertion of the upper right margin of outer lip, and which would be posterior when the animal was crawling.

Pupina pineticola, var. *modesta*, nov. (Pl. IX. fig. 1.)

Compared with *pineticola* this variety is slightly more globose, the spire is shorter, and the opening of the posterior canal is narrower. The peristome is inclined more to the spire and the basal portion is also more produced in front than in *pineticola*.

Further, as seen from the front the auricle, which partly covers the anterior canal, forms an acute triangle, whereas in *pineticola* it is truncate.

Maj. diam. 3, alt. $4\frac{1}{2}$ mm.

Hab. Queensland (Voyage of 'Challenger').

Pupina clara, sp. n. (Pl. IX. fig. 2.)

Shell imperforate, oblong-conic, rather thin, subtransparent, polished, orange-yellow colour, apex lighter, suture margined; whorls $6\frac{1}{2}$, earlier ones decidedly convex, later only slightly so; aperture subcircular, orange-yellow within; peristome white, its margins thickened, opening of anterior canal at rear, narrow in front, opening of posterior canal *as seen from front of shell* narrow, its direction a little towards the right-hand side.

Maj. diam. 6, alt. $12\frac{1}{2}$ mm.

Hab. Port Denison, Australia (*ex Coll. Dr. Cox*).

This shell has been distributed as *meridionalis*, Pfr., from which it can be readily separated by its larger aperture, more rapidly increasing whorls, its brighter, smoother, and highly polished surface, and its different shaped auricle above the anterior canal.

P. meridionalis, Pfr., is a duller shell, with fine, close-set,

oblique striae upon the middle whorls; it is also rather more cylindrical in form than *clara*.

Pupina subpolita, sp. n. (Pl. IX. fig. 4.)

Shell imperforate, oblong-oval, shining, light horn-colour, finely striated by growth-lines; suture rather deep, narrowly margined at last half-whorl; whorls $5\frac{1}{2}$, regularly increasing, convex, penultimate as wide as the last; aperture circular; peristome white, thickened and narrowly expanded, margins joined by a parietal callus, anterior and posterior canals subcircular, the openings as seen from the front being very narrow; operculum horny, whorls 5, sharply defined by raised spiral ridges, last four about equal in diameter.

Maj. diam. 3, alt. 5 mm.

Hab. Richmond River, New South Wales (*Sid. W. Jackson*).

This species is allied to *P. pineticola*, Cox, but the latter is smoother, the whorls increase rather more rapidly, are less convex, and the last whorl is rather broadly and distinctly margined at the suture, whereas *subpolita* is only indistinctly and very narrowly margined on the last half-whorl.

In *pineticola* the anterior canal cuts much more deeply and widely through the peristome than in *subpolita*, in which it goes only about halfway through; in *subpolita* the posterior canal is narrower and its direction is slightly to the right, not towards the apex as in *pineticola*.

Pupinella densecostata, sp. n. (Pl. IX. fig. 7.)

Shell rather deeply rimate, oblong-conic; sculptured with close-set raised striae, dirty white colour; whorls 7, earlier very convex, later ones moderate, slowly and regularly increasing; aperture circular, whitish within; peristome white, moderately expanded, continuous; anterior and posterior canals circular, both piercing deeply into the lip, but not cutting right through.

Maj. diam. $4\frac{1}{2}$, alt. 11 mm.

Hab. Port Curtis, Queensland.

Closely allied to *simplex*, Fult. but readily separated by its shorter stouter form.

Pupinella simplex, sp. n. (Pl. IX. fig. 3.)

Shell narrowly umbilicated, ovately conic, finely obliquely striated, dirty white colour; whorls 6, moderately convex, regularly increasing; aperture circular, whitish within; peristome thickened and slightly expanded, white, continuous;

anterior canal circular, not piercing quite through the lip, posterior canal cutting about halfway only through peristome; operculum horny, smooth, about 5 whorls.

Maj. diam. $4\frac{1}{2}$, alt. 9 mm.

Hab. Port Curtis, Queensland.

Intermediate between *planilabris*, Pfr., and *densecostata*, Fult.; it is smaller than the former species, not so smooth, and the anterior canal is situated lower, the opening as seen from the front being larger; from the latter species it differs in having one whorl less, rather less conspicuous sculpture, and the whorls are also less convex and increase more rapidly than in *densecostata*. I have seen this shell labelled as *P. Covi*, Morelet, but that species, according to the type specimen now in the British Museum, is the same as *P. planilabris*, Pfr.

XXXII.—Description of a new Species of Unio (Cuneopsis) from Yunnan. By HUGH C. FULTON.

[Plate IX.]

Unio (Cuneopsis) tauriformis, sp. n. (Pl. IX. fig. 9.)

Shell obliquely ovate, truncate anteriorly, wedge-shaped posteriorly, solid, periostracum dark, having a silky lustre, exterior umbonal region with raised zigzag ridges, concentric striæ below, the umbones turned slightly inwards, decorticated; two cardinal teeth in the left valve, the anterior rather thin, the posterior thick with a deep triangular pit between, right valve with one thick cardinal tooth situate below the umbo, lateral teeth long and roughly striated; nacre silvery; a deep pit marks the place of the anterior adductor, the posterior scar being only moderately indented.

Diameter: anterior-posterior 31 mm., umbo-ventral margin 20; thickness $16\frac{1}{2}$.

Hab. Yunnan-fu, Yunnan.

I have been unable to find any species closely allied to this, which I take to belong to the genus *Cuneopsis*, Simpson (Proc. U.S. Nat. Mus. vol. xxii. 1900, p. 804).